

Approved
for entry
10/13/05

chamber, each end of said chamber defining a fluid flow means for allowing fluid to enter and exit said chamber;

a valving means for controlling a flow of fluid to and from said chamber such that fluid is supplied to said one end of said chamber causing said shuttle to move from said first position to said second position so as to eject a predetermined volume of fluid from said chamber and subsequently the fluid is supplied to said opposite end of said chamber so as to cause said shuttle to move back from said second position to said first position so as to eject another predetermined quantity of the fluid from said chamber, said valving means comprising:

a spool valve having a cylindrical spool axially slidably received within a cylindrical bore;

a driving means cooperative with said spool for driving said spool between two positions in response to said shuttle reaching either said first position or said second position, said spool in one of said two positions creating a fluid flow path for pressurized liquid from a fluid flow inlet duct to said fluid flow means at one end of said chamber and for creating a fluid flow path from said fluid flow means at the other end of said chamber to a fluid flow outlet duct, said spool in the other of said two positions creating a fluid flow path for pressurized liquid from said fluid flow inlet duct to said fluid flow means at said other end of said chamber and creating a fluid flow path from said fluid flow means at said other end of said chamber to said fluid flow outlet duct, said driving means being a motor arrangement that is controlled by a control unit in response to a signal generated in response to said shuttle reaching either said first position or said second position.